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ABSTRACT

The research described in this document investigated the feasibility of matching teachers with their preferred style of teaching. Ninety teachers working with sixth-grade students were randomly assigned to either a highly structured or a low-structured curriculum. Teaching effectiveness (judged by student achievement) was compared in three situations: training in the preferred style, training in the non-preferred style, and teaching in the preferred style without training. The main effects were analyzed with t tests on the outcome measure. Training effects were analyzed by competency comparisons across treatments, using means and standard deviations of observer ratings. Results indicated that teaching assignments and inservice training can be adjusted to teaching style. Low structured curricula may be destructive to children and teachers with high anxiety levels. The research reported in this document was subject to a major technical difficulty and as a consequence the speculations should be qualified. Despite this technical weakness, the report is being circulated because the work undertaken may be of interest. (Author/MBM)

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A STUDY ON TEACHING STYLE

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In his presidential address to the American Psychological Association, Lee Cronback suggested that "natural style" ought to be a significant factor in occupational training. Cronbach's notion was--rather than fit the individual to the job--it might be more efficient to fit the job to the individual. Some years later, in an article published in the Harvard Review, Abraham Maslow suggested a similar approach. Using these ideas as a starting point we conjectured that it might be possible to match a teacher's style with a teaching method

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that was particularly appropriate, and going a step beyond, join both of these with a student who also had a high affinity for the same teaching method. We knew, in short, that it was possible to devise alternative instructional programs with which to accomplish the same objective, that most children learn more easily with one kind of method than with another, and that teachers usually prefer a particular form of instruction. Theoretically it should be possible to combine all three elements in such fashion that maximum congruence be obtained.

One other factor also increased our incentive. During the past decade a great many curriculum innovations were advocated. Most of these were based on one particular instructional and learning mode. Heuristic teaching and inquiry learning, for example, were heavily endorsed. In the belief that learners ought to make decisions about their own education, specialists devised relatively flexible instructional programs in which teachers and pupils were urged to pursue whatever course of action seemed most appropriate at the moment. We had no wish to quarrel with such curricula, but we did question whether they would be fitting for all teachers and students. It seemed reasonable to assume, as a case in point, that although the economic principle of supply and demand could be learned either inductively or deductively, one or the other might be more comfortable for a particular child or teacher. The history of education has demonstrated,

time and again, that ideas can achieve high fashion, whether or not they are supported by legitimate evidence. Innovations have negative as well as positive consequences, and it is not uncommon to find that a solution to a problem has spun-off a new, albeit different, difficulty. Only rarely are social changes an unmixed blessing; unsuspected pitfalls, small and large, frequently are the by-product of progress.

In sum, our quest was to answer, if we could, four questions:

1. *Do teachers have a natural teaching style?*
2. *If there is a natural style, can it be used to reduce the problems of teacher retraining?*
3. *If a natural style exists, can it be altered?*
4. *If a teacher has a natural teaching style, can it be conjoined both with a pupil's natural learning style and with a particular teaching method so as to achieve minimum contradiction among the three?*

Hence, we set about to design a study that might provide answers. We were unable, after a preliminary search, to find two programs which used distinctly different methods to reach exactly the same instructional goals. It was relatively easy to locate curricula which made use of either inductive or deductive procedures, and different textbooks on the same subject were readily available, but we could not discover instructional materials which contrasted method but not objective, and which also satisfied our study requirements. Accordingly, we decided to use our own units on contemporary

social problems, developed the previous year.

The effectiveness of a training program depends, not on changes in the teacher, but on the teacher's ability to generate changes in the learner. Since intelligence influences learning, we recognized that reliable I.Q. scores would be an essential factor in the study. California law requires that all children be given an intelligence test during the sixth grade. Consequently, we elected to work with sixth-grade teachers in several California districts. Using the six units as the instructional program, we carefully constructed a structured teaching guide. Employing a group of experienced teachers, we asked them to plot a systematic sequence of teaching steps which would, to the maximum extent possible, eliminate the need to make decisions about the teaching pattern and, at the same time, insure good results. We called this high-structured model the Precision Teaching Method. The content to be used, the reasoning skills to be mastered, and the social values to be encouraged, were all specified in advance. In addition, the guide for each unit provided a precise strategy and a set of specific activities to be used with each of the objectives. The actions of both teacher and student were detailed and virtually everything was organized beforehand.

The unstructured model was labeled the Contingency Teaching Method. Content and objectives were precisely the same as those in the Precision Teaching Model. There was, however, little preliminary organization. Teachers were allowed to select whatever teaching methods seemed most desirable, to choose activities appropriate to the learning situation, and, importantly, to give the pupils considerable control over their own learning. In offering prospective participants in the study the option of either Precision or Contingency teaching, we made it clear that the two programs were equally respectable. Pointing out that experienced teachers frequently achieved excellent results with each, we emphasized that the choice was primarily a matter of preference.

Because very little research has been done on style in teaching, the need to compare the effects of one style against those of another posed some difficulty. We know, for example, that children learn in different ways, and that teachers use different methodologies, but we do not really understand the distinctions which separate one style from another. After a review of the literature we concluded that the phenomena of anxiety lent itself to the kind of exploratory study we wished to make. Previous research had shown that highly structured learning programs frequently produce better performance by high-anxious children. Low-anxious children either do better in a comparatively unstructured program, or perform no differently under the two

conditions. We could find no research which compared the teaching styles of high-anxious and low-anxious teachers, but we conjectured that a similar relationship might exist: high-anxious teachers might prefer and do better with a tightly structured teaching program.

It seemed feasible, therefore, to use anxiety level as a way of getting at individual variation in style. Since stylistic preferences in teaching probably are linked to personality variables, we could capitalize upon what was already known about the relationship between anxiety and the desire for situational control, and examine stylistic inclinations among teachers. Studies carried out by several researchers (McKeachie, 1951; Grimes and Smith, 1961; Kight and Sassenrath, 1966; Campeau, 1968; and Gifford, 1967) indicated that a learning situation which follows a consistent and predictable order frequently reduces anxiety. Possible explanations of this effect were discussed in reviews by Crockenberg (1968) and again by Cronbach (1969). These analyses suggested that it would be possible to organize a study which would test the following prediction: some teachers will perform better in a structured learning program whereas other teachers will perform better in an unstructured one. The prediction seemed worth testing if only because of the pronounced emphasis on heuristic learning which accompanied recent curriculum reforms.

The majority of new curricula introduced between 1960 and 1970, particularly in social studies, mathematics, and science, reflected a shift from deductive to inductive learning. Relying heavily upon what has come to be known as inquiry learning, the programs require the pupil to be self-directing in finding solutions to problems. Flexibility and open-endedness are regarded as a better method of learning than the carefully sequenced structure which characterized earlier curricula. While certain kinds of children thrive in an open-ended situation, the effects on those prone to anxiety, and those whose nature may require more pre-organization, is uncertain.

Of even greatest interest, however, was the question of the possible effect of training on teaching style. If style is defined as a self-determined action within a range of options, that produce a specific pattern of teaching behavior, what aspects of the pattern (and to what extent) can be altered through training? To get at these issues we divided the teachers into six sub-groups, three in the sample that selected Contingency teaching and three in the sample that selected Precision teaching. In each sample, one-third of the teachers received whatever kinds of in-service training activities they thought would be most useful; no judgment was made regarding either the quality or the relevance of the requested activities. A second sub-group in each sample was asked to engage in training which reinforced their preferred style; teachers who selected the Precision teaching model

were given training experiences which were intended to increase their technical ability to structure learning and teaching. The remaining third of each sample received training activities which were designed to counteract their preferred style; teachers, for example, who selected the unstructured teaching program were given training in structured teaching and those who preferred a structured approach were taught to use a variety of unstructured methods.

The study, in effect, represented an exercise which permitted us to operate programs in the field and, at the same time, to explore the art of in-service education. Within the reality of actual situations, it enabled us to learn more about the possibility of taking advantage of a teacher's natural inclinations and, correspondingly, to discover what is involved in modifying these inclinations. And, as an additional bonus, the study allowed us to test the assumption that certain instructional modes are incongruent with the personalities of children and, similarly, that certain teaching methods are antagonistic to the psychological predispositions of teachers.

Purpose

We wished to investigate the consequences of matching teachers with their preferred style of instruction. Specifically, we wanted to learn the effects on student and teacher performance when teachers select their own instructional

methods. Second, we wished to determine whether there is a relationship between anxiety level and particular instructional programs. Can children, in other words, learn more efficiently when the teaching program does not increase their classroom anxiety? In short, the objective was to ascertain whether it is feasible to match a preferred teaching style with the mode of learning a child is most comfortable with and to determine whether such a match can facilitate teacher training.

If such a linkage is possible, if the benefits are advantageous, and if the staffing organization of the school can be used to achieve greater congruence between a child's learning mode and a teacher's instructional style, substantial gains are possible. Children will learn more effectively and find the process of learning more enjoyable. Student-teacher personality conflicts may be reduced, teachers are likely to find their work more satisfying, and--of particular importance--the range of problems with which teacher in-service education must cope will be greatly reduced.

Three predictions were inherent in the study: (1) children with considerable anxiety will perform better in a highly structured (hi-struc) learning program whereas children with a comparatively low level of anxiety will perform better in a low-structured (lo-struc) curriculum, (2) because of habit or personality, teachers tend to prefer either a high-structured or a low-structured instructional program, and (3) the

efficiency of in-service training is increased when the training fits the teachers preferred teaching style.

Method

Ninety teachers participated in the study. Members of the Center staff called upon interested teachers and showed them two models of a social studies curriculum: one that was highly structured and one that was comparatively unstructured. The teachers were advised that both models were useful and that neither offered a clear-cut advantage over the other. After examining the models the teachers were asked to select one or the other, depending upon their stylistic preference.

The hi-struc curriculum was heavily prescriptive; teacher behavior was programed so that the teaching activities were specified in sequence, the instructional goals were stated in advance, the learning experiences for the children were organized in logical order, and most of the student assignments were detailed in advance. The lo-struc curriculum, in contrast, was only minimumly prescriptive. While the instructional goals were predetermined, the learning experiences were not organized in advance. The participants were required to devise their own methodology, heuristic learning was heavily encouraged, teachers were encouraged to adjust their strategies to the circumstances which prevailed and to accomplish the goals in whatever fashion seemed to make the most sense.

Once the primary high-structured and low-structured groups were established, each was divided, through random procedures, into three sub-groups. Every teacher thus was assigned to one of three experimental training situations:

(a) training in the preferred teaching style

(b) training in the non-preferred teaching style

(c) open training

It should be noted that the third sub-group, that designated as "open training," did not receive any systematic training. The teachers were given whatever kinds of assistance they requested. No attempt was made to provide instruction in a particular technique intended for use with either a structured or an unstructured teaching method.

Through these maneuvers, we made it possible to compare the effects of training on teaching style. We were able to learn, for example, whether teachers who initially expressed a preference for a structured curriculum could, through training, be conditioned to successfully use (and like) an unstructured curriculum. Similarly, we also could determine whether better training results are achieved when the training does not run counter to the teacher's preferred style of teaching.

The training procedures for all six sub-groups were based upon methodologies developed the previous year. Facilitators were used as on-site agents; the input of specialists was disseminated through these facilitators; all training

activities were operated during the regular work day, and in the teachers' own school; feedback, simulation, demonstrations, and other training devices were related directly to the teaching assignment; and, wherever possible, teachers were encouraged to assist one another in the acquisition of new skills.

All of the teachers worked with sixth-grade children of similar socio-economic status. We chose sixth-grade children primarily because verbal and non-verbal scores on the Lorge-Thorndike intelligence test had been obtained shortly before the commencement of the study. Using children with parallel backgrounds helped to increase the validity of the comparison we wished to make. We also made an effort to select classrooms which were reasonably heterogeneous as to I.Q. and which had approximately the same number of students. Since intelligence and anxiety have a slightly negative correlation, it was essential to avoid a wide disparity in the intellectual capacity of the children.

At the outset, every student was given the Sarason Test Anxiety Questionnaire, (How I Feel About School). The questionnaire is an easily administered scale yielding a reliable indication of anxiety level. In a group of thirty or more youngsters, the odds are very great that some children will manifest a high degree of anxiety while others will be relatively free from undue anxiousness. It seemed reasonable to assume, consequently, that every teacher would have

both kinds of students. This assumption was verified by the data that later was collected.

It also was important, during the course of the experiment, to determine whether the teachers actually used the teaching style which they had selected to estimate the amount of student interest in each of the two curricula, and to find out whether teacher competencies increased as a result of the training. Accordingly, we modified the Sears Behavior Rating Scale and trained our staff personnel to develop consistency in its use. Each teacher was observed three or more times during the course of the study.

Children who say they are anxious about tests and other school activities may or may not be anxious in a particular class with a particular teacher. Hence, it seemed desirable to collect from the children periodic statements which would show either an increase or a decrease in anxiety. An eleven-item questionnaire (How I Feel About This Class) was created for this purpose. All of the teachers gave their students the questionnaire on three separate occasions, approximately every two weeks, during the experiment. The evidence thus obtained enabled us to judge whether (1) the structured curriculum, because it was certain, secure, and organized, reduced anxiety, or (2) the level of anxiety remained constant and the amount of cognitive load (memory, attention, induction) varied.

In addition to specific-situation measurements of anxiety, four other assessments were crucial. We needed to know (1) how effectively the children using each curriculum learned, (2) whether there was any difference in the satisfaction high and low-anxious children experienced with each curriculum, (3) the extent of teachers' satisfaction with the instructional style used, and (4) the effect of the training program in reversing the initial stylistic preferences of teachers.

To assess the extent of student learning, we used two series of tests for each unit developed during the previous year. One series measured the amount of acquired information and the other measured the ability to use the productive thinking skill on a new problem. Both tests were given to all students in all the sub-groups.

To get at the matter of student satisfaction, we devised an instrument (The Kind Of Classroom I Like) which indicated what kind of learning situation the student would select if he were given a choice between a structured and an unstructured curriculum. This satisfaction measurement also was given to pupils in all sub-groups. In addition, we were able to make indirect judgments about student satisfaction from data contained in the classroom observation records.

Finally, we asked the participating teachers to complete a Teacher Reaction Form. This form yielded three

kinds of evidence: the amount of value the teachers attached to their training activities; their satisfaction with the kind of curriculum used; and third, it revealed whether the teacher--given another opportunity to select from a structured or unstructured instructional program--would reverse the choice made at the beginning of the study.

All in all, the methodology lacked the tightness ordinarily expected in a controlled experiment. The resulting flexibility, on the other hand, allowed us to look at the interaction between a number of variables which otherwise would have been impossible.

Data Analysis

"Reasoning at every step he treads," Cowper said, "Man yet mistakes his way." From a statistical point of view, the study was defeated by an improbable disaster.

The Center for Coordinated Education has dealt with research data since its beginning. The other partner in the crime, the computer facility of the Ventura County Schools Office, is a good-sized organization with a long, credible data processing history. The catastrophe which occurred, consequently, was all the more unlikely. Nevertheless, it did occur: the raw data was lost.

In the aftermath, the explanation seemed simple enough: data contained on cards was fed into a computer. The cards were then placed on an "in-process" shelf. During a brief delay in the proceedings, necessitated by employee vacations, a technician inadvertently transferred the card decks to the "completed" shelf. Sometime thereafter they were thrown away. Errors of this sort should not happen, and almost never do. In retrospect, one wonders why a duplicate set of cards was not prepared, why the normal checks against loss of data were not operative, and so on. Such conjectures, however, cannot compensate for the irretrievable waste. The data-processing sub-contractor offered to return his fee, the principal investigator withstood disbelief, dismay,

disgust and the temptation to remove himself to a remote monastery in Tibet. The only positive note in the deplorable stream of events was the fact that a substantial portion of the data was transferred to the computer before the card decks were discarded. The analysis which follows is based on this residue.

Apart from the lost data, during the course of the study there was some attrition of students: testing was scheduled at specified times and those students not present when a test was administered were casualties. As a result, none of the data analysis contained exactly the same students. The attrition problem was handled by eliminating those students from the study. The missing data was handled by eliminating from the analysis only those students whose score was missing on the variable of interest. Since the absence of some data made it impossible to obtain an unbiased sample, the critical decision was whether to proceed with the planned statistical analysis and then qualify or disclaim the exact probability of the results, or to rely upon descriptive statistics to illustrate the findings. Since the effect of qualifying a statistical analysis is equvalent to asking a reader to look at descriptive data and decide for himself as to its worth, a decision was made to perform a preliminary analysis by obtaining elementary, descriptive statistics in those situations where the computation of a probability was inappropriate, and to base further analytical techniques on the character of

these results. If, for example, a non-ambiguous interpretation of the effects of the two styles of teaching was not apparent from the descriptive analysis, a decision to use the available data in a two-factor analysis of covariance design, employing the I.Q. scores as a covariate, could have been made, even though it would have constituted a biased test of the contention that high anxious children perform better in a highly structured program. In addition to the foregoing example, the following procedures would have been employed had problems not developed:

To test the hypothesis that there was a disordinal interaction of anxiety and structure, a regression analysis using the General Linear Hypothesis program would have been used. Competency of teachers over treatments would have been compared by examining means and standard deviations of observer ratings. The competency of Ss assigned to their preferred curriculum would have been compared with that of Ss assigned to non-preferred treatment by analyzing means and standard deviations of observer ratings, and contrasting student achievment in the different experimental situations.

Main effects of the curriculum treatments would have been analyzed with t-tests on the outcome measure. The relationship of I.Q. and anxiety would have been determined by correlating I.Q. with anxiety, comparing I.Q. means at three levels of anxiety as a check for non-linearity. Finally, the

effect of inservice training would have been analyzed by comparing teacher competence, using student achievement as the criterion, across the differential treatments. After subsequent deliberation, however, we decided to not attempt projections beyond the preliminary analysis of the data. On the analyses completed, all subjects for which there was data on the variables were included in the computation.

The Sarason Test Anxiety Questionnaire was administered to all students at the beginning of the study. I.Q. scores were obtained from the school records of the students. Using the style selected by the teacher (structured or unstructured) and scores on the Sarason Test (upper 1/3 or lower 1/3), the students were placed into one of four categories. The I.Q. distributions for the four groups are shown in Table 1.

Table 1

Means and Standard Deviations of I.Q. Scores

Group	High Anxiety	Low Anxiety
Structured	Mean = 98.63 S.D. = 17.14	Mean = 106.73 S.D. = 16.00
Unstructured	Mean = 93.52 S.D. = 12.59	Mean = 104.24 S.D. = 13.55

Table 1 indicates that the sample of low anxiety students had a higher mean I.Q. than the high anxiety students. The difference is larger than would be expected from a slight negative correlation between anxiety and I.Q.. The students participating in a structured teaching program had a higher mean I.Q. than those who participated in an unstructured curriculum. This difference probably was due to sampling as there was no known systematic difference between the students in the structured and unstructured groups.

To investigate the relative effect of the structured and unstructured curricula on the anxiety level of the students, the Rubin Scale (How I Feel About This Class) was administered three times during the course of the study. The difference between the first and third administration of the instrument was computed to determine changes in anxiety about school. The results of the first administration and the differences between the first and third administration are shown in Table 2.

Table 2

Means and Standard Deviation
of Rubin Scale
(First administration and change scores)

Group	High Anxiety	Low Anxiety
Structured:		
1st Administration	Mean = 3.87 S.D. = 2.67	Mean = 1.04 S.D. = 1.12
Change between 1st and 3rd administration	Mean = -.98 S.D. = 3.71	Mean = -.45 S.D. = 1.01
Unstructured:		
1st Administration	Mean = 4.98 S.D. = 2.33	Mean = 1.13 S.D. = 1.21
Change between 1st and 3rd administration	Mean = -1.49 S.D. = 4.71	Mean = -.51 S.D. = 1.55

From Table 2 it can be seen that the High Anxiety groups, as measured by the Sarason Test Anxiety Questionnaire, score high on the Rubin Scale also. This gives support to the assumption that both instruments measure the same construct and leads one to predict that the computation of a Pearson product moment correlation would show a large amount of common variance between the two measures. The standard deviation of the high anxiety group on the pretest is larger than that of the low anxiety groups, indicating that they are more

heterogeneous on the Rubin Scale than are the low anxiety groups. The change scores are quite revealing. The means of all scores are negative, demonstrating that anxiety decreased for all four groups.

For the low anxiety groups, the mean of the Rubin Scale indicates that slightly less than half of these students obtained the lower limit of the Rubin Scale. Therefore, the amount of potential change in the low anxiety group was limited by the test's characteristics. The scale should probably be modified so as to yield higher scores if it is to be a useful instrument for measuring change.

The high anxiety group changed significantly between the first and third administration of the Rubin Scale. The large standard deviation implies that many of the students in the high anxiety groups changed substantially, the tendency being for high scores to decrease rather than for low ones to increase. This phenomenon might be interpreted as a lack of stability in the anxiety measure or, conversely, a student inclination toward responding to the test situation rather than to the instructional environment.

An alternate interpretation would be that student expectations gradually shifted during the period which intervened between the first administration and the third administration of the scale; anticipated stress may have been dispelled.

The movement of all groups toward a less anxious state during the program could well be explained by an unwarranted initial apprehension over a new school experience. Experience with the program may have reduced the tensions present at the beginning.

The results of the Basic Achievement Test that was administered at the termination of the program are shown in Table 3.

Table 3

Means and Standard Deviations
of the Basic Achievement Test

Group	High Anxiety	Low Anxiety
Structured:	Mean = 19.25 S.D. = 5.46 P < .02	Mean = 21.26 S.D. = 5.84 P < .03
Unstructured:	Mean = 17.11 S.D. = 6.10 P < .03	Mean = 19.85 S.D. = 5.69 P < .02

The results of the Basic Achievement Test are congruent with what could have been predicted from the intelligence scores. (See Table 1). The group with the highest mean I.Q. scored highest on the achievement measures and, conversely, the group with the lowest mean I.Q. registered the poorest

scores, the remaining groups distributed accordingly. The teaching effectiveness of structured and unstructured curricula appears equal when teachers are allowed to use the style of teaching they prefer.

The teachers who participated in the inservice training programs were asked to rate the quality of the training they received. The responses were tabulated on a five-point scale: Poor (1), Fair (2), Good (3), Very Good (4) and Excellent (5). The results are shown in Table 4.

Table 4

Mean and Standard Deviations
of Rating of Inservice Training

Type of Training	Precision Teaching (Structured)	Contingency Teaching (Unstructured)
Training in Preferred Style	Mean = 4.07 S.D. = 1.12 N = 12 P < .05	Mean = 4.49 S.D. = .88 N = 13 P < .04
Training in Non-preferred Style	Mean = 3.09 S.D. = 1.37 N = 13 P < .06	Mean = 2.79 S.D. = 1.05 N = 13 P < .03
Open Training	Mean = 2.82 S.D. = 1.05 N = 14 P < .05	Mean = 2.93 S.D. = 1.11 N = 12 P < .04

The rating pattern for both the structured and unstructured training programs indicated that teachers trained in their preferred style judged the training to be of greater worth than those who were trained in a contradictory style. Similarly, teachers who received "open" training rated the program less highly than those who were trained in their preferred style. It can be inferred, therefore, that teachers receiving training which is compatible with their beliefs about teaching will rate the same program higher than teachers whose beliefs contradict the ideology represented in the training program. It should be noted that a mean of 3.00 represents a "good" program, so all groups regarded their training as close to "good" or better.

All teachers were given instructional objectives to accomplish through instruction. Those teachers in the structured environments had their behaviors programmed while the teachers in the unstructured situations were allowed considerable flexibility in teaching behavior. Teacher satisfaction with the instructional program selected was evaluated on a five-point scale ranging from "poor" to "excellent." The results are shown in Table 5.

Table 5

Mean and Standard Deviations
of Rating of Instructional Program

Type of Training	Precision Teaching (Structured)	Contingency Teaching (Unstructured)
Training in Preferred Style	Mean = 4.78 S.D. = 1.27 N = 12 P < .03	Mean = 4.49 S.D. = 1.21 N = 13 P < .04
Training in Non-preferred Style	Mean = 3.76 S.D. = 1.76 N = 13 P < .03	Mean = 3.68 S.D. = 1.81 N = 13 P < .03
Open Training	Mean = 4.01 S.D. = 1.21 N = 14 P = .02	Mean = 3.93 S.D. = 1.25 N = 12 P < .03

One of the most striking results of the satisfaction ratings was their unpredictable strength. When the group means are rounded to the nearest scale point, five groups rated the program "very good" and one group rated it "excellent." The pattern of responses implies that teachers who used an instructional style for which they had been trained, liked the training better than those who were trained for an instructional methodology which differed from the one they were using. The teachers who received the

"open" training also rated the inservice activities higher than those teachers who received training that conflicted with their selected style, but lower than those whose training was congruent with their teaching style. From these results, one can infer that a training program will affect teachers' satisfaction with an instructional curriculum for students. Satisfaction tends to be highest when training parallels teaching and lowest when training and teaching are dissonant.

The teachers were asked if, in retrospect, they felt that they had made the right choice in selecting a teaching style. Of the 77 teachers, 67 responded affirmatively and 10 stated that they had made a poor selection (Chi square = 42.2, $P < .01$). This result is consistent with the rating of the training programs: teachers trained in their preferred style expressed the highest satisfaction with both the training received and the instructional curricula selected.

On the question asking what teaching style would be selected on another occasion, 36 teachers indicated they would select a different style and 41 teachers would choose the same style again (Chi square = .27, $P > .05$). This non-significant difference means that many teachers who felt they made the right style choice, would nevertheless choose a different style on another occasion. Because of the consistent positive responses to questions pertaining to style selection in the study, one is led to believe that many teachers have an authentic desire to broaden their technique by learning alternate methodologies.

Near the end of the study, all students were given an opinionnaire instrument (The Kind Of Classroom I Like). The opionnaire was a ten item, four choice per item, instrument designed to measure preference for a structured versus unstructured learning environment. A score of 25 represents no preference, or more correctly, an indiscriminate attitude toward structured and unstructured curricula. The analysis of the scores for the high-anxiety and low-anxiety groups are presented in Table 6.

Table 6

Means and Standard Deviations of
High Anxiety and Low Anxiety Groups on
"The Kind of Classroom I Like."

High Anxious:	Mean = 33.0 Standard Deviation = 5.6 N = 926	
		t = 2.04 P < .05
Low Anxious:	Mean = 16.0 Standard Deviation = 6.2 N = 897	

The results of the analysis are consistent with the contention that anxious students prefer the absence of ambiguity and uncertainty that is characteristic of a structured learning program. The low anxious group manifested the opposite

effect preferring a more unstructured learning environment. Presumably, because of a lower level of anxiety about school performance, the students tend to prefer learning modes that allow greater choice among activities and more individual responsibility.

In order to monitor the classrooms of the cooperating teachers, observers visited each class three times during the study. An adaptation of the Sears Behavior Rating Scale was used as the observation instrument. The primary purpose of the observations was to determine whether the teachers were actually teaching in the style (structured or unstructured) to which they were assigned. The rationale for requiring the observers to use an instrument that informally rated the total learning situation was to create a task for the observers which masked the pejorative implications of a "check-up." As anticipated, the majority of the ratings did not indicate any systematic differences between the six situations (two teaching styles reinforced by three different kinds of training). The critical element on the rating scale was dichotomizing teaching style as either structured or unstructured. The results of the observations for the four factors where type of training and teaching environment can clearly be compared is shown in Table 7.

Table 7

Percent of Teachers Retaining
Style Throughout Training

	Observation			
	1	2	3	Total Classrooms
Assigned Structured Teaching Training in Preferred Style	98	92	94	12
Assigned Structured Teaching Training in Non-Preferred Style	92	72	84	13
Assigned Non-structured Teaching Training in Non-Preferred Style	88	61	78	15
Assigned Non-structured Teaching Training in Preferred Style	94	98	96	13

During the course of the experiment most teachers maintained the style they originally selected. The attempts to alter style through inservice training therefore were unsuccessful. It is not known, unfortunately, whether the training programs which sought to change teaching style were a failure because (a) the teachers wished to respect their original commitment, (b) their predisposition for the selected style was sufficiently strong that it could not be overcome through a reasonable amount of training, or (c) the training program itself was inherently ineffectual. What is most to be regretted, however, is the fact that the missing data cards prevent an evaluation of the teachers' performances as

measured by the achievement of their students. Although they cannot be verified, some additional inferences regarding the effects of the training appear in the discussion section which follows.

Discussion

At first blush, the study would seem to have been a tragic waste. Because of the lost data, the hypotheses must remain largely unanswered, and the major potential of the research was dissipated. There are, however, some redeeming features since the available evidence does permit a few conditional conclusions as well as a number of subsidiary inferences.

One of the study's primary objectives was to assess the possibility of matching teachers with a preferred instructional style, and to determine the effects of such a match on both student and teacher performance. If nothing else, the work did demonstrate that teachers can indeed be grouped according to stylistic preference. Moreover, they respond with great favor to teaching programs which permit a degree of personalization. We also can infer, primarily from observer judgments, that teachers are reasonably adept at controlling some purity of style: that is, teachers can establish a classroom environment which is either structured or unstructured.

Medley and Hill (1970) found, in an earlier study, that a teachers' cognitive attributes are closely related to their teaching style. The amount and kind of knowledge a teacher possesses, for example, is likely to influence the sorts of teaching methods habitually used. "Teachers who know most about teaching principles and practices tend to teach by

question-and-answer rather than by the lecture method." Although the present study did not get at the issue directly, there was some indirect corroboration of the Medley and Hill findings.

For want of the missing data, we were unable to test the correlation between style of teaching and student performance. It is interesting to note, however, that most students achieved as well or better than expected. Since the teachers were aware that anxiety was an important variable in the experiment, and knew as well which of their students demonstrated high anxiety on the test instruments, they may have compensated in one way or another without violating their choice of either a structured or an unstructured environment. Of most significance in this connection was the overwhelming tendency for high anxious students to find greater satisfaction in a structured learning program. In this sense, at lesst one of the hypotheses was partially confirmed.

The relationship between anxiety and student achievement is well-documented in the literature. Spielberger (1966) has noted that anxiety seems to have a definitive effect upon both cognition and the desire to achieve. Similarly, Wallach and Kogan (1965) have shown that anxiety frequently enhances learning performance, particularly when the individuals are of high intelligence. We were unable to find a definitive

correlation between anxiety level and learning performance, but we did find indications that the relationship between learning environment and anxiety level is more than incidental. While our evidence was hardly free from contamination; the classroom observations, the expressions of teacher attitude, and the reactions of students all point to the probability of a significant relationship. The teachers, as was noted earlier, tried to restrict themselves to the style they selected. However, many also took steps to reduce the anxiety of particular children, employing various forms of reassurance. The fact that most of the teachers who used reassurance tactics were in the unstructured group is suggestive of the implicit interaction between classroom environment and anxiety. Sieber and Crockenberg (1970) have described various methods of coping with anxiety in the classroom: "Altering the situation, altering the students emotional responses to anxiety-provoking situations, and strengthening the cognitive processes that are adversely affected by anxiety." It is entirely possible that many of the teachers used such coping behaviors either advertently or inadvertently.

In contrast, the evidence on the effects of training on performance and style are somewhat more definitive. Irrespective of the kind of training received, there was at least a temporary change in the teacher's classroom behavior. This

was undoubtedly due to some Hawthorne effect. Even where the teachers received a relatively unsystematic kind of assistance (open training) some benefits were noted. Relatively speaking, however, the greatest potency was achieved when teachers were trained in accordance with their stylistic preferences. This held true for both the structured and the unstructured programs. It seems reasonable to conjecture, therefore, that the differential benefits which teachers traditionally derive from inservice training programs is closely related to the "natural" affinity they have for the training objectives. Put another way, the study analysis suggests that training difficulties will be encountered whenever the training objectives conflict in any way with the teacher's attitudes, beliefs, and stylistic dispositions.

It is likely that the teachers, in making their stylistic choices, selected the style with which they were most familiar and hence most comfortable. It is understandable, therefore, that they responded more favorably to training which fit their custom. But we have no way of determining whether the stylistic preference, in the first place, was a consequence of habit, conviction, or natural aptitude. The question is sufficiently intriguing as to warrant further investigation. It would be interesting to know, for example, whether training designed to overcome habit or belief would meet with greater success than training which attempted to counter aptitude.

Suming up, it seems reasonable to argue that the study, despite its infirmities, represented another step in the analysis of teaching style. Clearly, teachers do have stylistic preferences which probably are based upon natural aptitude as well as upon a conglomerate of other intangibles. Moreover, the alteration of natural style may not be as easy as we may have thought. Much depends upon the power of the training. But much depends, as well, upon the attribute to be modified. The odds are, for example, that it would be far easier to persuade an authoritarian teacher to become more permissive than to persuade a permissive one to become more authoritarian. Thus, when more is known, it may prove more expedient to rely upon "natural selection" than to attempt major remodeling of teaching behavior.

It seems fair to argue, also, that anxiety is commonplace in the school. Some children respond to anxiety provoking situations more than others, and some situations may provoke more anxiety than others. As Sarason (1960) has said: "persons become anxious whenever they are exposed to cues associated with punished acts." Both the teacher's cues and the behavior which students believe will draw punishment therefore bear upon anxiety level. It follows, as a consequence, that inquiry and other inductive learning modes may breed excessive anxiety among students if the teacher is imperceptive or imprudent.

Finally, it is necessary to add the philosophical note which customarily follows a disaster. In retrospect, the study was interesting and worth pursuing. It should be replicated--perhaps in modified form--and a tight hold should be maintained on the data at all times.

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